IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	) Atty. Docket: **ICB0188**
	)
Frédéric LEUBA et al.	) Confirmation No.: 1142
	)
Serial No.: 10/085,285	) Examiner: Thanh S. PHAN
	)
Filed: February 24, 2002	) Art Unit: 2841
	)
For: USE OF NON-MAGNETIC PATHS FOR AN ELECTRONIC MODULE INTENDED FOR A TIMEPIECE	) Date: February 27, 2007))

DECLARATION OF YVES GUÉRIN UNDER 37 CFR § 1.132

I, Yves Guérin, a French citizen residing at 22 rue Charles Rischer, F-68300 St Louis, France, declare that:

1. I received my engineering degree with a specialization in micromechanics from the Ecole Nationale Supérieure de Chronométrie et de Mécanique de Besançon (now named Ecole Nationale Supérieure de Mécanique et de Micromécanique – http://www.ensmm.fr), Besançon (France), in 1972.

2. From 1974 to 1979, I was a research engineer at Portescap-France in Besançon (France), where I worked on the development of miniature electric stepping motors.

3. Since 1979, I have worked as a research engineer at ETA SA Manufacture Horlogère Suisse, Department Research and Development, "Group Motors", in Granges (Switzerland), where I worked on the development of miniature electric stepping motors, electromechanical transducers using permanent magnets, reduction of the power consumption of stepping motors in electronic timepieces. I have contributed to several technical publications and I hold 12 patents in the field of miniature electric stepping motors and in other related fields (see Appendix A).

4. Ferromagnetism is the capacity of specific elements to strongly magnetize itself under the effect of an external magnetic field, and for specific elements (magnets, solid magnetic materials) to keep a strong magnetization even after the magnetic field has disappeared.

5. Regarding ferromagnetic elements, for industrial use, only iron, cobalt, and nickel are ferromagnetic. Some rare earths (lanthanides) are also ferromagnetic at low temperatures.

6. Concerning alloys and ferromagnetism, the situation is very complicated: some alloys containing iron and nickel are not ferromagnetic whereas the Heusler alloy, which contains only non ferromagnetic metals (for example, 61% Cu, 24% Mn, 15% Al), is ferromagnetic. At least, it is necessary to add the ferrites from which the composition is "MO ; Fe_2O_3", where M is a divalent metal. The oldest known example of such an alloy is magnetite Fe_3O_4 (FeO ; Fe_2O_3).

7. Regarding non-magnetic materials, it is well known that a non-magnetic material is a material which does not have ferromagnetic properties. As mentioned in Hans C. Ohanian, Physics (1985), pp. 738-749, materials may be classified as ferromagnetic, paramagnetic, or diamagnetic. It is easy to recognize a ferromagnetic material among paramagnetic and diamagnetic materials, depending on its permeability constant,.

8. In my opinion, U.S. Patent No 6,562,709 (Lin) teaches the use of conductive metallic materials such as nickel (which is ferromagnetic), copper, gold, palladium for a conductive trace. Lin teaches protecting electroplated copper used in the conductive traces with another electroplated metal such as nickel, palladium or gold. But the potential magnetic properties of the materials used are never mentioned. Furthermore, Lin does not disclose the use for the protective layer of a nickel based alloy containing phosphorous or of a palladium based alloy.

9. I have read the specification of the present, above-captioned, application, in particular the Admitted Prior Art (page 2, line 29, to page 3, line 4). I am of the opinion that it teaches that electrically conductive paths are typically made in two steps: a first step wherein a layer of good conductive material, such as copper or gold based alloy, is deposited on the substrate, and a second step wherein a fine protective layer of a nickel based alloy is deposited on the conductive layer. Whereas copper and gold are non magnetic metals, the specification mentions that the nickel based alloy used in such prior art protective layers is ferromagnetic.

10. In order to show the superiority of a printed circuit comprising conductive paths made entirely of non-magnetic materials according to the claimed invention, as compared to a printed circuit comprising conductive paths made of ferromagnetic materials, the inventor measured friction on the generator. The annexed table (see Appendix B) shows that friction produced on the generator, when ferromagnetic conductive paths are used, is four times as high as friction produced when non-magnetic conductive paths are used.

11. All statements made herein of my knowledge are true. All statements made on information and belief are believed to be true. These statements were made with the knowledge that wilful false statements and the like so made are punishable by fine, imprisonment, or both, under 18 U.S.C. 1001 and may jeopardize the validity of the application or any patent issuing thereon.

Signed by,

Date: 26 février 2007

Yves Guérin

Yves GUÉRIN